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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,970	06/29/2001	Soon Sung Yoo	8733.453.00	6132

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EXAMINER

KIELIN, ERIK J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 05/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,970

Applicant(s)

YOO ET AL.

Examiner

Erik Kielin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 9-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of the invention of Group I, claims 1-8, in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 9-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

4. The disclosure is objected to because of the following informalities:
on p. 2, line 22, remove "is" for clarity.
Appropriate correction is required.
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Liquid Crystal Display Having Uniformly Adjusted Heights
of the Main Seal and Surrounding Dummy Seals

Claim Objections

6. Claim 1 is objected to because of the following informalities:
- in line 1, after “substrate” insert a semicolon for consistency.
- Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,239,855 B1 (**Nakahara** et al.).

Regarding claim 1, **Nakahara** discloses a liquid crystal display device (title), comprising:

a first substrate **21** (Fig. 2);

a main seal **14** (called “injection seal” col. 9, line 20) on the first substrate and defining a liquid crystal injection area **14a**;

a first step coverage-compensating layer (called a “functional film in an inner area within the injection seals” col. 4, lines 57-62) disposed between the first substrate and the main seal;

a plurality of dummy seals **22** (Figs. 2 and 11, or alternatively **42** in Fig. 7 or **62** in Fig. 21) on the first substrate **21** and external to the liquid crystal injection area; and

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a second step coverage-compensating layer (called a “functional film which is within and outer area outside the liquid crystal injection area” col. 4, lines 57-62) disposed between the first substrate and the plurality of dummy seals, the second step coverage-compensating layer having substantially a same thickness as the first step coverage-compensating layer (col. 4, lines 57-62 --especially lines 60-62). (See also col. 5, lines 59-64; col. 6, lines 51-59; col. 6, line 66 to col. 7, line 4; col. 9, lines 20-27; paragraph bridging cols. 9-10 --especially col. 10, lines 8-17.)

Regarding claim 2, the main seal **14** is provided with a liquid crystal injection hole **14a** through which a liquid crystal can be injected.

Regarding claim 3, the main seal **14** and the dummy seals **22** have a same thickness (Fig. 11).

Regarding claim 5, a top of the main seal **14** and tops of the dummy seals **22** are a same distance from the first substrate (Fig. 11).

9. Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by **Nakahara** considered with Applicant's admissions of record.

Nakahara teaches that the LCD may be a TFT-driven LCD (col. 15, lines 37-49). Accordingly, it is seen to be inherent that the TFT-driven LCD of **Nakahara** has a gate metal pattern on the substrate forming a gate line and a gate electrode; and a gate-insulating layer covering the gate metal pattern because Applicant teaches that TFT-driven LCDs have these features. (See instant specification pp. 2-4.)

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakahara**.

Regarding claim 4, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for providing the thickness of the first coverage compensating layer (“functional film”) or specifically that the thickness of about 6500 Å.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to make the first coverage compensating layer thickness about 6500 Å in order to provide a uniform cell gap, in line with the teaching in **Nakahara**.

Moreover, the thickness is *prima facie* obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. See *In re Woodruff*, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also *In re Huang*, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also *In re Boesch*, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and *In re Aller*, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

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Regarding claim 7, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for stating that the first and second step coverage-compensating layers include the gate metal pattern and the gate-insulating layer.

However, **Nakahara** teaches that the functional film may be any film performing a function --hence the term "functional film"-- and has a thickness that may affect the height difference between the main (injection) seal (paragraph bridging cols. 9-10). **Nakahara** also teaches that the dummy seals and that such films include, *inter alia*, "ITO, an inorganic film, an insulative film, an alignment film, a protective layer, or the like" (col. 10, lines 14-16).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to make the first and second step coverage-compensating layers include the gate metal pattern and the gate-insulating layer in **Nakahara** because **Nakahara** teaches that the film should be functional, such as a gate metal pattern and a gate-insulating film, and that any thin film having a thickness should be included underneath **both** the main (injection) seal and the dummy seal in order to maintain uniform cell gap.

Regarding claim 8, the prior art of **Nakahara**, as explained above, discloses each of the claimed features except for stating that the main seal and the dummy seals are formed on the gate-insulating layer.

As noted above, **Nakahara** teaches that the main (injection) seal and the dummy seal should be formed on the same step coverage-compensating film (i.e. "functional film") in order to maintain uniform cell gap (col. 5, lines 59-64; col. 6, lines 52-59; paragraph bridging cols. 9-10).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the main and dummy seals of **Nakahara** on the gate insulating layer because **Nakahara** teaches that the functional film in both the main seal and dummy seal areas is the same material layer and the same thickness in order to prevent height differences between the main and dummy seals, thereby maintaining uniform liquid crystal cell gaps.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Each of JP 07-020478 (**Toru et al.**), JP 10-123539 (**Koichi**), and 09-123210 (**Satoru et al.**) teaches the use of height-adjustment compensating layers to make the main and dummy seals have equal heights. (See the Abstract and Figs. in each reference.)

US 5,621,553 (Nishiguchi et al.) teaches main 21 and dummy 22 seals (Fig. 3D) formed over equivalent height adjustment layers.

US 6,072,556 and US 6,239,854 B1 (each to Hirakata et al.) each teaches the use of adjustment layers to provide uniform height in the sealing region (Abstract, figures).

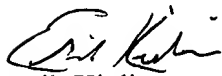
US 6,373,544 B1 (Hirabayashi et al.) teaches the use of adjustment layers to provide uniform height in the sealing region (Abstract, figures).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
April 30, 2003